

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of claims 1 and 4-10 in the reply filed on 11 December 2009 is acknowledged. Claims 2-3 and 11-15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Information Disclosure Statement

The information disclosure statement filed 20 October 2006 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Specification

The disclosure is objected to because of the following informalities: Please include the following sections of the specification labeled appropriately and in the correct order:

- (f) **Background of the Invention**: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:
 - (1) **Field of the Invention**: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject

matter of the claimed invention. This item may also be titled "Technical Field."

(2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."

(g) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

(h) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.

(i) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 10 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 10 requires that the raw materials to form the oxide thin films are composed of several oxides that will be in the final films themselves. The breadth of the claims is fairly narrow; there are certain oxides that are to be used as raw materials. In claim 1, the parent claim to claim 10, the raw materials are vaporized into a raw gas, and in combination with an oxidizing and carrier gas, are used to make the oxide films. The nature of the invention is such that there are other raw materials, such as BZT film precursors in the Examples and paragraph 0035, for example, of the instant specification, and not the oxides as claimed, that are actually used to make the oxide films. The state of the prior art would support this, as in the rejections below, it is common to vaporize a liquid or solid precursor such as that for a BZT film and add an oxidizing group to receive an oxide film. An oxide itself to be used as a raw material for an oxide film would have an unreasonably high sublimation point, and would most likely undergo sintering if heated to melt the oxide, destroying its chemical structure. Further, if one was to use an oxide as a raw material to make an oxide film, the use of an

additional oxidizing agent is questionable. The level of one of ordinary skill, such as a bachelor's or master's level with appropriate surface coating background, would not be able to repeat the experiment by sublimating an oxide to make an oxide film again because of sintering and a high sublimation temperature. Using an oxide as a raw material would not be predictable in the art, but using other raw materials would be. The amount of direction provided by the inventor is shown by the working examples in which the raw materials are not the oxide compounds but other precursor compounds used to achieve the final film as an oxide. There would be an unreasonable amount of experimentation associated with trying to sublimate an oxide as a raw material to make an oxide film, for the reasons above. Therefore, using the oxide as the raw material is not enabled. It is further noted that paragraph 0014 repeats the same language used as in claim 10. It is believed that the paragraph and claim 10 should be corrected to read that the resulting oxide films are comprised of the oxides given in the claim and in this paragraph, not that these oxides are the raw materials.

Claim 10 is also rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a credible asserted utility or a well established utility, as discussed above.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5 and 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 recites the limitation "metal atom-containing molecules". There is insufficient antecedent basis for this limitation in the claim, as it was not previously established that the raw material in its vapor phase is comprised of a metal raw material.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1 and 4-8 are rejected under 35 U.S.C. 102(a) as being anticipated by Kher et al. (US 2003/0012875 A1).

As to claim 1, Kher et al. teaches a method for preparing an oxide thin film on a substrate, the method comprising admixing a raw gas obtained through the vaporization of a raw material for the oxide thin film, a carrier gas, and an oxidation gas in a gas-mixing unit (paragraphs 0023-0024 and 0030, Figure 1B – reference number 11 is the mixing area), and supplying the resulting gas mixture on a heated substrate(paragraph 0031) placed in a reaction chamber as a chemical vapor phase growth apparatus through a shower plate whereby the gas mixture will react with each other (paragraphs

0023-0024). The rate of oxidation gas flow is not less than 60% in the gas mixture as in paragraph 0036.

As to claim 4, as broadly claimed, the oxidizing gas enters in Figure 1B between part of the mixing chamber at the shower head at reference number 12. This would effectively activate the gases as claimed as it would begin to oxidize the raw source gas.

As to claim 5, the temperature entering the showerhead causes the gases to decompose into metal atom containing molecules preparing a film to have desired properties (such as film coverage, as broadly claimed) in the gas activating means in paragraph 0030-0031.

As to claim 6, the gases are maintained at a temperature between evaporation temperature and deposition temperature as in paragraph 0030.

As to claim 7, the claimed oxidizing agents are listing in paragraph 0030.

As to claim 8, the claimed carrier gas is argon, for example, in paragraph 0030.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kher et al. in view of the American Heritage Science Dictionary (accessed with www.dictionary.com)

As to claim 9, Kher et al. does not list the specific substrates, but includes all ceramic substrates and semiconductors in paragraph 0032. By definition, ceramics are metallic elements combining with oxygen, or with carbon nitrogen or sulfur. Claim 9 lists various materials that would be considered ceramic by one of ordinary skill in the art.

Therefore, it would have been obvious at the time of the invention to include the claimed substrates within the broad ceramic substrate disclosure given by Kher et al., as Kher et al. has shown the recognized suitability of using all ceramic substrates when depositing his metal oxide films.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Subramony et al., Luo et al. and Sugahara et al. show similar procedures.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KELLY GAMBETTA whose telephone number is (571)272-2668. The examiner can normally be reached on Monday - Thursday 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kelly M Gambetta/
Examiner
Art Unit 1792

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